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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,040	09/30/2003	John K. Walton	EMC2-131PUS	5449
45456	7590	07/23/2007		
RICHARD M. SHARKANSKY			EXAMINER	
PO BOX 557			WINDER, PATRICE L	
MASHPEE, MA 02649				
			ART UNIT	PAPER NUMBER
			2145	
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			07/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/675,040

Applicant(s)

WALTON ET AL.

Examiner

Patrice Winder

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 5-20-2005; 5-23-2005.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1 and 10 are provisionally rejected on the ground of nonstatutory double patenting over claim 1 of copending Application No. 10/112,598. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

Present application	Application 10/112, 598
1. A system interface comprising:	1. A data storage system for transferring data between a host computer/server and a bank of disk drives through a system interface, such system interface comprising:
plurality of directors, one portion of such directors being adapted for coupling to a host computer/server and another portion of the directors being adapted for coupling to a bank of disk drives, the plurality of directors being interconnected through a network; and	a plurality of first directors coupled to the host computer/server; a plurality of second directors coupled to the bank of disk drives; wherein a pair of the first directors are adapted for coupling to the pair of logic networks.
a common resource section for providing a resource shared among the plurality of directors.	a cache memory, such cache memory having: a common memory array having a pair of redundant data/control ports; a pair of logic networks each one coupled to a corresponding one of the pair of data/control ports; wherein there are separate point-to-point data paths between

	each one of the directors and the global cache memory;
Regarding dependent claim 10, including a cache memory coupled to the directors and the shared resource though the network.	a cache memory, such cache memory having: a common memory array having a pair of redundant data/control ports; a pair of logic networks each one coupled to a corresponding one of the pair of data/control ports; wherein there are separate point-to-point data paths between each one of the directors and the global cache memory;

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

3. Claims 1 and 10 are rejected on the ground of nonstatutory double patenting over claim 11 of U. S. Patent No. 7,007,194 B1 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows:

Present application	US Patent No. 7,007,194 B1
1. A system interface comprising:	11. A data storage system for transferring data between a host computer/server and a bank of disk drives through a system interface, such system interface comprising:
plurality of directors, one portion of such directors being adapted for coupling to a host computer/server and another portion of the directors being adapted for coupling to a bank of disk drives, the plurality of directors being interconnected through a network; and	a plurality of first directors coupled to host computer/server; a plurality of second directors coupled to the bank of disk drives; a messaging network, operative independently of the data transfer section, coupled to the plurality of first directors and the plurality of second directors;
a common resource section for providing a resource shared among the plurality of directors.	a data transfer section having a cache memory, such cache memory being coupled to the plurality of first and second directors,

Regarding dependent claim 10, including a cache memory coupled to the directors and the shared resource though the network.	wherein the first and second directors control data transfer between the host computer and the bank of disk drives in response to messages passing between at least a pair of the plurality of first and second directors through the messaging network with such data passing through the cache memory in the data transfer section; and wherein there are separate point-to-point data paths between each one of the directors and the cache memory.
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Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 9 recites the limitation "the redundant network" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-5 and 7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by DeKoning et al., USPN 6,754,853 B1 (hereafter referred to as DeKoning).
8. Regarding claim 1, DeKoning taught a system interface (column 4, lines 12-17) comprising:

plurality of directors, one portion of such directors being adapted for coupling to a host computer/server and another portion of the directors being adapted for coupling to a bank of disk drives, the plurality of directors being interconnected through a network (column 4, lines 43-45); and

a common resource section for providing a resource shared among the plurality of directors (column 3, lines 15-16; column 4, lines 27-35; column 5, lines 2-5).

9. Regarding dependent claim 2, DeKoning taught the common shared resource section includes a shared computer code used by the plurality of directors (column 3, lines 15-19; column 4, lines 33-35).

10. Regarding dependent claim 3, DeKoning taught the code includes computer code for booting up each one of the plurality directors (column 4, lines 33-35; column 6, lines 31-35).

11. Regarding dependent claim 4, DeKoning taught the common shared code storage section is interconnected to the directors through the network (column 4, lines 35-39).

12. Regarding dependent claim 5, DeKoning taught including second, redundant common shared resource section (Figure 1 taught RAM 129 and firmware 128 associated with both controllers 124 and 126).

13. Regarding dependent claim 7, DeKoning taught such system interface includes a second, redundant network coupled to the second shared resource section for use in interconnecting the directors in the event the first mentioned one of the shared resource sections fails (Figure 1 taught multiple network fabrics 132, column 4, lines 45-48).

14. Regarding dependent claim 8, DeKoning taught the network is a packet switching network (column 1, lines 33-35; column 4, lines 22-25).

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15. Regarding dependent claim 9, DeKoning taught the redundant network is a packet switching network (column 1, lines 33-35; column 4, lines 45-48).

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

18. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeKoning in view of Bramhall et al., USPN 6,675,258 B1 (hereafter referred to as Bramhall).

Regarding dependent claim 6, DeKoning does not specifically teach a second, redundant common shared resource section. However, Bramhall taught second, redundant common shared resource section stores computer code used by the plurality of directors in the event the first mentioned one of the common shared code storage section fails (column 4, lines 23-29, 61-67). It would have been obvious to one of ordinary skill in the art at the time the invention was made that incorporating Bramhall's

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second, redundant common shared resource section in DeKoning's system for determining faults in a data storage system would have improved reliability. The motivation would have been because providing redundant firmware would ensure operability despite controller failures.

19. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeKoning in view of Guha et al., USPN 7,181,57 B1 (hereafter referred to as Guha).

20. Regarding dependent claim 10, DeKoning does not specifically teach including a cache memory coupled to the directors and the shared resource though the network. However, Guha taught teach including a cache memory coupled to the directors and the shared resource though the network (column 11, lines 43, 59). It would have been obvious to one of ordinary skill in the art the time the invention was made that incorporating Guha's cache memory in DeKoning's system for determining faults in a data storage system would have improved storage management. The motivation would have been to better manage fail-over during storage device faults.

Conclusion

21. Shagam, USPN 6,397,295 B1: taught disk controller and host computers, in order to increase their throughput, can include cache memories which store data to be written to a global memory and taught an improvement for preventing "stale" cache data.

22. Oldfield et al., US 2002/0133740 A1: taught a redundant controller data storage system, wherein each controller has its own memory that is the mirror image of the

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other controller. The mirrored memories allow for fast recovery in case of failure or loss of one controller or its memory.

23. Oliveira et al., USPN 6,766,359 B1: taught a plurality of directors in connected through a network, such that one portion of such directors are adapted for coupling to a host computer/server and another portion of the directors are adapted for coupling to disk drives and a cache memory.

24. Purcell et al., USPN 6,836,815 B1: taught processor crossbars PXB provide interconnections between processors P and memory crossbars MXB. Memory crossbars MXB provide interconnections between memory controllers MC and processor crossbars PXB.

25. Pittelkow et al., USPN 7,003,668 B1: taught a system and method for a reserved memory area shared by all redundant storage controllers.

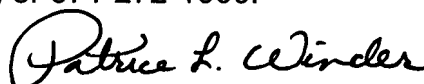
26. Tanaka et al., EP 1 037 137 A2: taught a disk array controller including a plurality of host interfaces and disk device interfaces. Duplicated shared memories connected in a one-to-one ratio between each interface and respective access path. A cache memory connected to the interfaces through a selector.

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrice Winder whose telephone number is 571-272-3935. The examiner can normally be reached on Monday-Friday, 10:30 am-7:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Cardone can be reached on 571-272-3933. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Patrice Winder
Primary Examiner
Art Unit 2145

July 13, 2007